CLAIMS:

1. An X-ray detector which includes:

a) at least one conversion unit (1) for the absorption of X-ray quanta while generating an electric charge signal which corresponds to the absorbed energy,

b) at least one evaluation unit (10) for processing said charge signal in a counting channel (5) whose counter output (8) presents a measure of the number of charge signals detected since a beginning of measurement as well as, in parallel therewith, in an integrator channel (7) whose integrator output (9) presents a measure of the overall charge of the charge signals detected since a beginning of measurement,

c) at least one data processing unit (11) which processes the signals from the counter output (8) and from the integrator output (9) in combination so as to determine the absorbed quantity of X-rays.

2. An X-ray detector as claimed in claim 1, characterized in that the data processing unit (11) is arranged in such a manner that it attaches more weight to the signals from the counter output (8) than to the signals from the integrator output (9) in the case of a low absorption rate of the X-ray quanta.

3. An X-ray detector as claimed in claim 1 or 2, characterized in that the data processing unit (11) is arranged in such a manner that it attaches more weight to the signals from the integrator output (9) than to the signals from the counter output (8) in the case of a high absorption rate of the X-ray quanta.

4. An X-ray detector as claimed in at least one of the claims 1 to 3, characterized in that the data processing unit (11) is arranged in such a manner that it determines the mean energy of the detected X-ray quanta from the signals from the counter output (8) and the signals from the integrator output (9).

5. An X-ray detector as claimed in at least one of the claims 1 to 4, characterized in that the evaluation unit (10) includes an input amplifier (2) which preprocesses the charge

signal presented by the conversion unit (1), notably amplifies it, and conducts the signal thus preprocessed to the counting channel (5) and to the integrator channel (7).

6. An X-ray detector as claimed in at least one of the claims 1 to 5, characterized in that it includes a plurality of conversion units (1) which are arranged so as to be distributed in one plane, that is, preferably in the form of a matrix.

7. An X-ray detector as claimed in claim 6, characterized in that each conversion unit (1) is associated with an evaluation unit (10) and a data processing unit (11), all evaluation units and data processing units being formed as microelectronic units on a common substrate.

8. A method of evaluating the absorption signals of an X-ray detector which is preferably arranged so as to face an X-ray source in a computed tomography apparatus, which method includes the following steps:

a) counting the X-ray quanta absorbed by the X-ray detector in a time interval;

b) integrating the absorption energies of the X-ray quanta absorbed in said time interval,

c) determining the mean absorption energy of the X-ray quanta absorbed in said time interval from the measurements in the steps a) and b),

d) comparing the mean absorption energy from the step c) with the original emission spectrum of the X-ray source.

9. A method as claimed in claim 8, characterized in that it is carried out by means of a detector as claimed in at least one of the claims 1 to 7.

10. An X-ray examination apparatus which includes an X-ray source for the emission of X-rays and an X-ray detector with:

a) at least one conversion unit (1) for the absorption of X-ray quanta while generating an electric charge signal which corresponds to the absorbed energy,

b) at least one evaluation unit (10) for processing said charge signal in a counting channel (5) whose counter output (8) presents a measure of the number of charge signals detected since a beginning of measurement as well as, in parallel therewith, in an integrator

channel (7) whose integrator output (9) presents a measure of the overall charge of the charge signals detected since a beginning of measurement,

c) at least one data processing unit (11) which processes the signals from the counter output (8) and from the integrator output (9) in combination so as to determine the absorbed quantity of X-rays.